

## CLAIMS

1. A method of operating a fuel reforming system, the method comprising the steps of:

operating a fuel reformer so as to produce a reformat gas,

advancing the reformate gas through a turbine of a turbocharger so as to produce pressurized air, and

advancing the pressurized air to an air inlet of the fuel reformer.

2. The method of claim 1, further comprising the step of  
10 advancing the reformate gas exiting the turbine to an intake of an internal combustion engine.

3. The method of claim 1, wherein:

the reformate gas comprises a hydrogen-rich gas, and

15 the reformatte gas advancing step comprises advancing the hydrogen-rich gas through the turbine and to an intake of an internal combustion engine.

4. The method of claim 1, further comprising the step of advancing the reformatte gas exiting the turbine to an emission abatement device.

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5. The method of claim 1, wherein:

the reformate gas comprises a hydrogen-rich gas, and

the reformate gas advancing step comprises advancing the hydrogen-rich gas through the turbine and to an emission abatement device.

6. The method of claim 1, further comprising the step of driving an electrical generator with an output of the turbine.

7. The method of claim 1, wherein:  
5 the turbocharger has a compressor coupled to the turbine, and  
the reformatate gas advancing step comprises driving the compressor with an output of the turbine.

8. The method of claim 1, wherein:  
10 the fuel reformer comprises a plasma fuel reformer having an air inlet, and  
the pressurized air advancing step comprises advancing the pressurized air through the air inlet of the plasma fuel reformer.

15 9. A fuel reforming system, comprising:  
a turbocharger having (i) a turbine with a reformatate gas inlet, and (ii) a compressor with a pressurized air outlet, and  
a fuel reformer having (i) an air inlet fluidly coupled to the pressurized air outlet of the compressor, and (ii) a reformatate gas outlet fluidly coupled to the  
20 reformatate gas inlet of the turbine.

10. The system of claim 9, wherein the turbocharger has a reformatate gas outlet fluidly coupled to an intake of an internal combustion engine.

11. The system of claim 9, wherein the turbocharger has a reformate gas outlet fluidly coupled to an emission abatement device.

12. The system of claim 9, further comprising an electrical  
5 generator having an input coupled to an output of the turbine.

13. The system of claim 9, wherein the fuel reformer comprises a plasma fuel reformer.

10 14. A fuel reforming system, comprising:  
an expander having a reformate gas inlet,  
a compressor mechanically coupled to the expander, the compressor  
having a pressurized air outlet, and  
a fuel reformer having (i) an air inlet fluidly coupled to the pressurized  
15 air outlet of the compressor, and (ii) a reformate gas outlet fluidly coupled to the  
reformate gas inlet of the expander.

15. The system of claim 14, wherein the expander has a reformate  
gas outlet fluidly coupled to an intake of an internal combustion engine.

20 16. The system of claim 14, wherein the expander has a reformate  
gas outlet fluidly coupled to an emission abatement device.

25 17. The system of claim 14, further comprising an electrical  
generator having an input mechanically coupled to an output of the expander.

18. The system of claim 14, wherein the fuel reformer comprises a plasma fuel reformer.

19. The system of claim 14, wherein the expander is selected from  
5 a group consisting of a turbine, a piston-type expander, and a screw-type expander.